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# Feedback and Modification

## Feedback

At the third Demo the following feedback was received:

* The fonts and size of headers were hard to read
* The top and bottom panels are not matching
* Add extra functionality:
  + Allow for ingredients to be removed manually and automatically from “Fridge”
  + Display quantity of an ingredient needed in a recipe
  + Allow for “Cooked” option which will signal that the recipe was cooked and will remove the ingredients used from the fridge.
  + Allow for users to un-favour recipes

## Modification

The high-fidelity prototype was altered to accommodate the above requirements obtained from the demo feedback.

* The fonts are changed to a more readable font
* The headers are resized and made bold for easier reading
* The top and bottom panels are made to match
* All the above mentioned functionality is made available
* Instructions across all the pages are added to guide the user for easier navigation

## User Needs

The final product, according to the designers, meets all the mentioned requirements and user needs specified in the first phase.

Some of the user needs established in the first phase were:

* Very little jargon should be used.
* Easy to use application as technological ability will vary from user to user.
* A great deal of the meals offered by our application should ones that are both cost and ingredient effective as well as easy and quick to make.

# Usability Test Planning

## Time Constraints

* Given 1 minute per task – there are 8 tasks and two rounds of three users at a time
  + Thus at least 50 minutes will be needed
  + Thus 10 minutes to set up will be sufficient

## Determine goals

Some of the potential goals:

* how users interact with the application
* How easy it is to use the application(usability)
  + How comfortable and easily users perform given tasks
* If any problems were experience
* How users reacted to certain scenarios
* If users obtained correct screens
* If product was aesthetically pleasing
* If the users have any complaints/suggestions about the application.

## Explore questions

Users will be given tasks to complete. Tasks will be aimed at testing the usability of the application.

Will also test navigation and exploration etc

To complement the findings from the tasks, the users will be given satisfaction questionnaires to fill out. The questions are formulated to find out if the user:

* enjoyed the application
* found it useful
* would use such it
* found it usable
* has any comments – Open question

### Satisfaction questionnaire

I consent that my information can be used for research purposes. *Please tick selections:*

Yes No

1. *Please tick the most appropriate selections:*

Age Range: 20-29 30+

Gender: Female Male

1. Did you enjoy using the application?

Yes No

1. This application will be useful to students that live alone.

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

1. Would you use such an application in your daily life?

Yes No

1. How did you find the tasks?

Easy

Moderate

Difficult

1. Do you have any comments/suggestions regarding the application?

## Choose evaluation methods

Possible methods:

* Record timing
* Average timing per task
* Observe reactions
* Record error
* Average errors
* Questionnaires
* Errors in total

## Identify practical problems

Some problems that may occur during usability testing:

* Users may not show - thus not a sufficient sample size to test product
* Users may lack necessary expertise needed to use the application and perform tasks
* Some users may have higher expertise when it comes to working with technology and applications and may complete tasks faster- affecting results.
* The recording program to track user navigation may fail

## Decide on how to deal with ethical issues

The way chosen to deal with ethical issues is:

* All users signed a consent form stating:
  + what is expected of them for the usability test
  + Anonymity is insured
  + User may pull out of the study at any time
* At the top of the satisfaction questionnaire there will be an option for the user to choose to state that they consent to participating in the test and that their answers may be used.

# Process Followed

The DECIDE principle is used. This involved discussions to determine the goals we are trying to accomplish, needs to be tested, how to test it, ethical issues etc.

## Determine goals

Usability testing is done in aim to find out:

* how users interact with the application
* How easy it is to use the application(usability)
  + How comfortable and easily users perform given tasks
* If any problems were experience
* If the users have any complaints/suggestions about the application.

## Explore questions

The team had to decide on how to test the application in order to achieve the above mentioned goals.

Users will be given tasks to complete. Tasks will be aimed at testing the usability of the application.

To complement the findings from the tasks, the users will be given satisfaction questionnaires to fill out. The questions are formulated to find out if the user:

* enjoyed the application
* found it useful
* would use such it
* found it usable
* has any comments – Open question

## Choose evaluation methods

The team had to plan on what methods to us in order to evaluate the application.

## Identify practical problems

Some problems that may occur during usability testing:

* Users may not show - thus not a sufficient sample size to test product
* Users may lack necessary expertise needed to use the application and perform tasks
* Some users may have higher expertise when it comes to working with technology and applications and may complete tasks faster- affecting results.
* The recording program to track user navigation may fail

The team decided that the usability test will follow the following procedure:

1. Team will arrive earlier to set up
   * Three laptops will be used for the tests as certain programs and functionality needs to be installed in order for the application to work (WAMP)
   * The recording software will be started up and ready to record
   * Questionnaires will be placed at each laptop along with pens.
   * Tasks will be made visible to the user either on the screen or on paper
2. When users arrive a team member will instruct them to fill in a consent form and will explain what is expected of them and give them instructions on how to proceed
3. The first three users will be allocated to a laptop
   * The recording software will be started
   * Users will start to execute the tasks
   * Once all tasks are executed the users will fill in the questionnaires
   * Once complete the questionnaires will be handed to one of the team members and the user will be thanked with an incentive.
4. When a user is finished with a laptop the recorded video will be saved and the next user will be placed at the laptop
   * New user will go through same procedure.
5. When all users have performed the test all equipment will be packed away and the results recorded and observed.

## Users

Five users that fit the target market (students – mainly living alone) were identified to perform the usability test. None of these users have any prior experience with the final product as this would affect the results.

## Decide on how to deal with ethical issues

The way chosen to deal with ethical issues is:

* All users signed a consent form stating:
  + what is expected of them for the usability test
  + Anonymity is ensured
  + User may pull out of the study at any time
* At the top of the satisfaction questionnaire there will be an option for the user to choose to state that they consent to participating in the test and that their answers may be used.

# Tasks Performed

The users will be asked to perform the following tasks.

1. Find the recipe called “Bunny Chow Bun Bun” in the cook-able recipe list. This was chosen as it is a vital part of the system to find a recipe in the cook-able recipe list. This is the main list as it is all recipes that are cook-able.
2. View the Steps to make the recipe called “Bunny Chow Bun Bun”. The viewing of recipes is vital as the application needs to show the recipe and all the details for the user to actually cook it and use other functionality that is on the system.
3. Favourite and find in the favourites list the recipe called “Bunny Chow Bun Bun”. This will test if the user is able to find the favourite button and then locate their favourite recipe so it is easier for them to find their most liked recipes.
4. Navigate to the fridge and filter the selection with “Milk”. Here we are testing that they can actually find the fridge and see if they can see if they have a certain ingredient in their fridge.
5. Add 200 grams of chicken to the fridge. This will test that the system actually adds the ingredient to the fridge in the correct quantities and measurements so that they can add a recipe in the cook-able list.
6. Look at the details for the recipe called “Grilled chicken and pasta salad” and click the “cook the meal” button. This tests that the previously added ingredient causes an extra recipe to pop up. This also tests that the user will be able to cook the meal that they have chosen.
7. Look at cook-able list and see if the recipe called “Grilled chicken and pasta salad” is still listed. This tests that the cooked meal button pressed cause the ingredients to be removed from the list and that it does not appear.
8. Go to the all recipes page and view any recipe. This was done so that the users knew where to find all recipes available and browse them like they would in the cook-able list. This is just to test that all the recipes are displayed and available.

# Evaluation Methods

Evaluation will be done using several techniques to test several aspects.

1. The total time taken to complete a task is recorded.
   * If the user took longer than 60 seconds to complete as task it is considered that the user did not complete the task.
   * Recording the time taken to complete each task will enable the designers to see how quickly and thus easily the user was able to navigate through the application.
2. The number of errors per tasks is recorded.
   * The more errors a user does during a task, the harder the user found the navigation and use of the application.
   * Thus testing usability, ease of flow and navigation
3. Time gap between errors per task.
   * Determining when an error occurred during a task will hint where problems with the application may have been encountered
4. Satisfaction Questionnaires
   * This will allow the user to report back about their user experience. This will give designers and idea of whether the user had a good user experience or not and if not how to improve it.

# Results

## Recording Results

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tasks** | **Users** | **Time per Task** | **Errors per Task** | **Errors in 1st half** | **Errors in 2nd half** |
| 1 | **1** | 14 | 0 | 0 | 0 |
| **2** | 12 | 0 | 0 | 0 |
| **3** | 24 | 1 | 1 | 0 |
| **4** | 19 | 0 | 0 | 0 |
| **5** | 10 | 0 | 0 | 0 |
|  | **Average** | 15,8 | 0,2 | 0,2 | 0 |
| The average time taken to complete a task is 15,8 seconds. User 3 took the longest which may show struggle. Only one error occurred thus the majority of the users performed well without difficulty. | | | | | |
| 2 | **1** | 17 | 0 | 0 | 0 |
| **2** | 19 | 2 | 2 | 0 |
| **3** | 11 | 0 | 0 | 0 |
| **4** | 8 | 0 | 0 | 0 |
| **5** | 14 | 0 | 0 | 0 |
|  | **Average** | 13,8 | 0,4 | 0,4 | 0 |
| The average time taken to complete a task is 13,8 seconds. User 1 and 2 took relatively longer to complete the tasks. Two errors were recorded both in the first half of the task. This may signal a navigation problem. | | | | | |
| 3 | **1** | 17 | 1 | 1 | 0 |
| **2** | 30 | 3 | 2 | 1 |
| **3** | 29 | 1 | 0 | 1 |
| **4** | 47 | 2 | 1 | 1 |
| **5** | 26 | 0 | 0 | 0 |
|  | **Average** | 29,8 | 1,4 | 0,8 | 0,6 |
| The average time taken to complete a task is 29,8. The majority of the users had errors and the majority of the errors occurred in the first half of the task execution. | | | | | |
| 4 | **1** | 25 | 1 | 1 | 0 |
| **2** | 5 | 1 | 1 | 1 |
| **3** | 34 | 2 | 1 | 0 |
| **4** | 17 | 0 | 0 | 0 |
| **5** | 30 | 2 | 2 |  |
|  | **Average** | 22,2 | 1,2 | 1 | 0,25 |
| The average time taken to complete a task is 22,2. The majority of the users had errors and the majority of the errors occurred in the first half of the task execution. | | | | | |
| 5 | **1** | 20 | 2 | 2 | 0 |
| **2** | 20 | 0 | 0 | 0 |
| **3** | 27 | 0 | 0 | 0 |
| **4** | 25 | 1 | 0 | 1 |
| **5** | 20 | 0 | 0 | 0 |
|  | **Average** | 22,4 | 0,6 | 0,4 | 0,2 |
| The average time taken to complete a task is 22,4. Three errors were recorded. Two were in the first half of the task execution and one was in the second half. Errors such as adding the ingredient twice were recorded. This is due to lack of confirmation when an ingredient is added. | | | | | |
| 6 | **1** | 12 | 1 | 1 | 0 |
| **2** | 32 | 1 | 1 | 0 |
| **3** | 32 | 0 | 0 | 0 |
| **4** | 27 | 0 | 0 | 0 |
| **5** | 20 | 0 | 0 | 0 |
|  | **Average** | 24,6 | 0,4 | 0,4 | 0 |
| The average time taken to complete a task is 24,6. The errors recorded were in the first half of the task execution. The majority of the users did not make errors. Thus the majority of the users performed well without difficulty. | | | | | |
| 7 | **1** | 14 | 0 | 0 | 0 |
| **2** | 28 | 1 | 1 | 0 |
| **3** | 34 | 0 | 0 | 0 |
| **4** | 25 | 0 | 0 | 0 |
| **5** | 10 | 0 | 0 | 0 |
|  | **Average** | 22,2 | 0,2 | 0,2 | 0 |
| The average time taken to complete a task is 22,2. One error was recorded during the first half of execution. Thus the majority of the users performed well without difficulty. | | | | | |
| 8 | **1** | 16 | 0 | 0 | 0 |
| **2** | 12 | 0 | 0 | 0 |
| **3** | 18 | 0 | 0 | 0 |
| **4** | 35 | 0 | 0 | 0 |
| **5** | 5 | 0 | 0 | 0 |
|  | **Average** | 17,2 | 0 | 0 | 0 |
| The average time taken to complete a task is 17,2. No errors were recorded | | | | | |

## Satisfaction Questionnaire Results

|  |  |  |
| --- | --- | --- |
| **Question** | **Options** | **Number of answers per option** |
|  |  |  |
| **Question 0** | Yes | 5 |
| No | 0 |
|  |  |
| **Question 1** | 20-29 | 5 |
| 30+ | 0 |
| Female | 2 |
| Male | 3 |
|  |  |
| **Question 2** | Yes | 5 |
| No | 0 |
|  |  |
| **Question 3** | Strongly Agree | 3 |
| Agree | 2 |
| Neutral | 0 |
| Disagree | 0 |
| Strongly Disagree | 0 |
|  |  |
| **Question 4** | Yes | 5 |
| No | 0 |
|  |  |
| **Question 5** | Easy | 5 |
| Moderate | 0 |
| Difficult | 0 |
| **Question 6** | Open - Question | |  | | --- | | Great UI interesting concept. | | Long detailed text was not visible. Integration to social network / myFitnessPal | | Favourite button hard to spot | | Easy to navigate and runs smooth | | Adding ingredients needs confirmation | |

# Conclusion

Looking at the tasks it can be deducted that the average time it took a user to perform a task is 21 seconds. No users failed to perform a task. Thus there was 100% success rate for the tasks. The majority of the errors recorded fell within the first half of task execution where the main activity is navigation. Thus the application’s navigation should be looked at and designed to be smoother and easier. Task three exhibited the most errors. This involved having to favourite a recipe. Thus the favourite option needs to be made more noticeable and self-explanatory. Task five exhibited some issues due to the lack of confirmation of an activity thus the application needs to improve feedback to the user.

Looking at the satisfaction questionnaires, it is deduced that, all data could be used since all user consented, all the users fitted the target market and there was an average amount of male and female users. All users enjoyed the application. Thus found it intuitive and fun to use – leading to a positive user experience. Three of the users strongly agreed that the application would be useful to the target market and two users agreed. All users said that they would use such an application. All users stated that the tasks were easy and this shows that since the tasks were found easy that the application is usable and easy to work with. Looking at the open question, some feedback included comments about the favourite button not being visible. This complements the findings obtained by looking at the task’s results. Another comment was that confirmation needs to be given when an ingredient is added. This also complements the results obtained from the tasks.

Thus looking back at the specified goals:

* how users interact with the application
* How easy it is to use the application(usability)
  + How comfortable and easily users perform given tasks
* If any problems were experience

It can be concluded that the users enjoyed interacting with the application and had a pleasurable user experience. The general feel of the application to use and navigate is concluded to be easy and thus very usable. The main problems that need to be addressed for future versions of the product are:

* Adding confirmation – giving users feedback after activities
* Making some options more visible
* Make navigation simpler and self-explanatory

# Appendices

# Technical Details

## Screens

1. Splash Screen
   1. Application logo and company details.
2. My fridge
   1. Contains all ingredients that user has in the fridge.
3. Search
   1. Types of searches:
      1. General search.
      2. Search by ingredients.
   2. Choose meal type you want:
      1. Breakfast.
      2. Lunch.
      3. Supper.
4. Settings and preferences page
   1. Themes perhaps (colour blind options).
   2. Sound options if any.
5. Contact Page
   1. Just our details, no code.
6. My favourites
   1. Users should be able to favourite recipe, this is then added to list so that it can be viewed later.
   2. Must decide how this is stored.
7. Trending Recipes
   1. Create an updated list of list of favorited recipes done by multiple users.
8. Recipe display
   1. General dynamic display used by all pages.
   2. Must display all details of recipe:
      1. Ingredients needed.
      2. Order of preparation.
      3. Rating.
      4. Picture of dish.

## Data storages needed

1. Main data containing all details about recipe
2. Favourites list
3. Settings
4. Ingredients in fridge

# Coding requirements

## Functions need

1. GetRecipes()
   1. Details
      1. Gets all recipes
   2. Returns
      1. Void but calls DisplayRecipes(RecipeList)
2. SearchRecipes(ingredients, MealTime)
   1. Details
      1. Gets all recipes based on ingredients that user has
   2. Variables
      1. Ingredients
         1. List of all ingredients a user has in its fridge.
         2. May want to use mediator to decide if general list or by user ingredients. E.g. \* means all, else it reads ingredients xml/data holder.
      2. MealTime – Breakfast, Lunch, Dinner or Any time.
   3. Returns
      1. Void but calls DisplayRecipes(RecipeList)
3. GetTrending()
   1. Details
      1. Gets all trending recipes from XML
   2. Returns
      1. Void but calls Display Recipes
4. DisplayRecipes(RecipeList)
   1. Details
      1. Creates display based on recipes provided to it.
      2. Look into splitting provided recipes into pages as to not show to many recipes on one page.
   2. Variables
      1. RecipeList – A list of all recipes to be displayed.
   3. Returns
      1. Void/The Display.
5. SaveSettings()
   1. Details
      1. Saves all changes made to settings
   2. Returns
      1. Void, but should call ApplySettings()
6. ApplySettings()
   1. Details
      1. Applies settings found in XML
   2. Returns
      1. Void but settings should be applied.
7. ReadSettings()
   1. Details
      1. Reads settings from XML
   2. Returns
      1. Void but should call ApplySettings()
8. AddToFavorites(Recipe)
   1. Details
      1. Adds recipe to XML
   2. Variables
      1. Recipe – The recipe you wish to add to favorites
   3. Returns
      1. Void
9. ReadFavorites()
   1. Details
      1. Reads data from XML
   2. Returns
      1. Void but calls DisplayRecipes(RecipeList)
10. RateRecipe(Recipe)
    1. Details
       1. Updates Rating in object in XML
    2. Variables
       1. Recipe – Recipe object you wish to change
    3. Returns
       1. Void but calls UpdateRecipe(UpdatedRecipe).
11. UpdateRecipe(Recipe)
    1. Details
       1. Updates Recipe in XML
    2. Variables
       1. Recipe – Recipe object you wish to change
    3. Returns
       1. Void.
12. GetIngredients(ingredient)
    1. Details
       1. Gets all ingredients that are like “ingredients” if ingredient = “\*” then return all
    2. Variables
       1. Ingredient you wish to search
    3. Return
       1. Void but calls DisplayIngredients()
13. DisplayIngredients(IngredientsList)
    1. Details
       1. Displays results provided in ingredients
    2. Variable
       1. IngredientsList holds list that must be displayed
    3. Return
       1. Builds display.
14. UpdateIngredients(IngredientList)
    1. Details
       1. Updates ingredients in the users fridge
    2. Variable
       1. IngredientsList holds list of ingredients that have been updated
    3. Return
       1. Void, just updates Ingredient list.

## Coding Libraries

We are using Cordova, which lets you build hybrid applications while only using Web code

1. HTML
2. JavaScript
   1. JQuery
   2. JQuery Mobile
   3. Bootstrap